

REMARKS

Claims 1, 2, 4-8 and 10-12 are pending in this application. By this Amendment, claims 1, 4 and 8 are currently amended.

I. THE CLAIMS DEFINE PATENTABLE SUBJECT MATTER

The Office Action rejects claims 1, 2, 4-8 and 10-12 under 35 U.S.C. §103(a) over JP 08-029153 to Fukuda et al. in view of WO 90/12277 to Bielle. This rejection is respectfully traversed.

A. Claims 1, 2 and 4-7

Fukuda et al. and Bielle, individually or in combination, do not teach, disclose or suggest "determining a swivel correction amount (an operational amount of linear length for adjusting the swivel angle to zero degree) ... wherein the X-axis coordinates at the measurement start point and the measurement end point of ordinary measurement are arbitrarily set for adjusting orientation and workpiece scanning," as recited in claim 1; and "calculating orientation of the workpiece from the positions to determine an inclination angle of the workpiece to the measurement direction to obtain an absolute quantity of an orientation correction amount (an operation amount of linear length for adjusting the inclination angle to zero degree) based on the inclination angle; ... wherein the positions of the workpiece at the measurement start point and the measurement end point of ordinary measurement are determined for adjusting orientation and workpiece scanning based on the edge line calculated by moving the workpiece in the Y-axis direction," as recited in claim 4.

B. Swivel Correction of Rotation Angle

Regarding the claimed feature of determining a swivel (rotation angle) correction by linear movement of the micrometer head, the Office Action relies on Bielle to supply a "manually operated leveling device." This assertion is respectfully traversed.

A feature of the claimed invention is determining a swivel correction amount, which is an operational amount of linear length for adjusting the swivel angle to zero degree, as recited in claim 1.

Bielle discloses no swivel correction. Further, since the inclination adjuster of Bielle is based on measurement values at two positions (position measurement) while in Fukuda, the workpiece surface is scanned (contour measurement), it is inappropriate to combine Bielle and Fukuda due to their different measuring methods. Furthermore, even if Bielle and Fukuda were combined, they do not disclose or suggest an arrangement in which the inclination angle is obtained by scanning the workpiece surface to calculate the operation amount of length.

C. Distinction between the Claimed "Ordinary Measurement" and Fukuda

In the claimed invention, the measurement start point and the measurement end point in adjusting relative inclination between the workpiece and measurement direction are the same with those points of the ordinary measurement, which is not disclosed in Fukuda.

A feature of the claimed invention is an arrangement in which measurement start point and measurement end point in adjusting relative inclination between the workpiece and measurement direction are the same with those start/end points of ordinary measurement (specification at page 14, lines 17-18; Fig. 8).

Another feature of the claimed invention is calculating an inclination value of the workpiece to obtain an operation amount of linear length, thereby correcting the inclination by a linearly moving micrometer head.

In Fig. 3 of Fukuda, the measurement start/end points are of temporary measurements of the workpiece 17. However, Fukuda does not disclose that the measurement start/end points of the ordinary measurement correspond to some of the point T1, T2 and T3 obtained by the respective scans Y1 to Y3. According to Fukuda's method, the measurement start/end

points of the ordinary measurement cannot be determined until correcting the inclination of the workpiece, since it is impossible to anticipate where each point T1, T2 and T3 corresponds to in the ridgeline of the workpiece 17. Accordingly, Fukuda's start/end points are for temporary measurement, but not for ordinary measurement.

Further, Fukuda discloses no arrangement in which rotation amount is calculated from an operation amount of linear length obtained based on the inclination amount.

Accordingly, Applicants respectfully submit that the rejection regarding the measurement start/end points is obviated. As claimed, the measurement start/end points in adjusting the inclination are the same with those start/end points in ordinary measurement.

The claimed invention according to claims 1, 2 and 4-7 is clearly distinct from Fukuda and Bielle. Fukuda and Bielle do not disclose or suggest the X-axis coordinates input means for inputting X-axis coordinates at measurement start/end points of ordinary measurement in adjusting the orientation of the workpiece orientation adjustment stage. Further, the applied references do not suggest swivel correction amount of linear length determined based on a swivel angle and adjusted by a linearly moving micrometer head.

D. Claims 8 and 10-12

The Office Action asserts that: "Fukuda teaches obtaining three (actual) measurements of the workpiece and using those measurements to find a center line (locus) which determines the amount of adjustment required to be performed to the workpiece to position the workpiece to the desired alignment; see paragraphs 23 and 24 of the English language abstract and Figure 4." This assertion is respectfully traversed.

Fukuda does not disclose or suggest "a manipulated variable calculation means for single scanning the surface of the workpiece by the displacement detecting means and for calculating a center locus, an inclination of the surface of the workpiece, of a series of at least three measurement data based on a single-scanned displacement signal," as recited in claim 8.

Instead, in Fukuda, a detector 24 is moved in accordance with X shaft orientations, making three parallel scanings for temporary measurement. A ridgeline of the summits of the three temporary measurements is used to compute the orientation of the workpiece (paragraph 0023 and Fig. 4). Fukuda therefore takes three scanings of temporary measurement to compute the orientation of the workpiece.

Accordingly, Fukuda and Bielle do not combine to result in the claimed feature of calculating a center locus based on a single scanning of a workpiece surface.

Furthermore, it is inappropriate to combine Bielle and Fukuda. Bielle and Fukuda do not disclose or suggest calculation of the operation amount of length based on the inclination angle.

For at least these reasons, it is respectfully submitted that claims 1, 4 and 8 are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Applicants respectfully request that the rejection under 35 U.S.C. §103(a) be withdrawn.

II. CONCLUSION

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 4-8 and 10-12 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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